DETAILED ACTION

Claim Objections

Claim 4 is objected to because of the following informalities: In lines 3 - 4 of claim 4, the recitation of "said noble metal oxide layer" requires a change to -- said platinum oxide (PtOx) layer – to be congruent with the terminology of claims 1 - 3 from which claim 4 is dependent. Appropriate correction is required.

Double Patenting

Please see previous office action dated 09/15/2008 for nonstatutory obviousness-type double patenting rejections made of record in regard to copending applications 10/563,012 and 10/568,582. Each double patenting rejection in regard to these copending applications is maintained.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-7, 10-11, 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 5, 7-9 of copending Application No. 10/563012. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons set forth in the last office action.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-6, 10-11, 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7, 10-11 of copending Application No. 10/565679. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons set forth in the last office action.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 – 4, 6, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fuji et al. ("A Near-Field Recoding and Readout Technology Using a Metallic Probe in an Optical Disk"), hereinafter referenced as Fuji, in view of Hsu et al. ("Blue – Laser Readout Properties of Super Resolution Near Field Structure Disc with Inorganic Write – Once Recoding Layer"), hereinafter referenced as Hsu, in view of Van Woudenberg (United States Patent Application Publication US 2002/0126602 A1), hereinafter referenced as Van Woudenberg, in view of Kim et al. ("Reactive recording with rare-earth transition metal"), hereinafter referenced as Kim(I), and further in view or Kim et al. ("Signal Characteristics of Super – RENS Disk at Blue Laser System"), hereinafter referenced as Kim(II).

Regarding **claim 1**, Fuji discloses an optical disk for recording and reproducing information that reads on the optical recording medium claimed. First, Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer" claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer, Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in view from said optically transparent layer" where the last layer, "said

substrate" is missing. Fifth, Fuji discloses the recording of the optical disk at a power of 6.5 mW and reproduction of the optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on "setting is done as: Pwx0.1≤Pr≤ Pwx0.5 when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam" because 6.5 mW times 0.5 equals 3.25 mW which is greater than 2.5 mW and 6.5 mW times 0.1 equals 0.65 mW which is less than 2.5 mW. However, Fuji fails to disclose "a substrate", "a platinum oxide (PtOx) layer", "wherein setting is done so that λ/NA is not longer than 640 nm when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam", and "while said optical recording medium includes setting information required for recording a recording mark train including recording marks each having a length not larger than λ/4NA and for reproducing data from said recording mark train". The examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "wherein setting is done so that λ/NA is not longer than 640 nm when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" and "a substrate", as taught by Hsu. In addition, the examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "setting information required for recording a recording mark train", as taught by Van Woudenberg. Furthermore, the examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "recording marks each having a length not larger than λ/4NA and for reproducing data from said recording mark train", as taught by Kim(I). Also, the examiner maintains that it was well known in the art for the optical disk for recording

and reproducing information disclosed in Fuji to include "a platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Hsu discloses a recording disc in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. Second, in a similar field of endeavor Van Woudenberg discloses a carrier that includes disc information data such as write power, writing speed, pulse width, and the like (page 3, paragraph [0023], lines 1—10) which reads on "while said optical recording medium includes setting information required for recording a recording mark train including recording marks each having a length not larger than λ/4NA and for reproducing data from said recording mark train" with the exception of "including recording marks each having a length not larger than λ/4NA". Third, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is λ/4NA (page 2, paragraph 4, lines 1—10) which reads on "including recording marks each having a length not larger than λ/4NA".

Fourth, in a similar field of endeavor Kim(II) discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Hsu to include "a substrate" because one having ordinary skill in the art would want to use the bottom substrate to increase substrate strength (see Hsu page 2, section 2, lines 23 – 25) Also, it would have been obvious to modify the optical disk for recording and reproducing information of Fuji with the teachings of Hsu to include "wherein setting is done so that λ/NA is not longer than 640 nm when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because one having ordinary skill in the art would want to use a shorter wavelength with a higher numerical aperture lens to decrease spot size and increase recording density (see Hsu page 1, paragraph 1, lines 1 – 6). In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Van Woudenberg to include "setting information required for recording a recording mark train" because one having ordinary skill in the art would want to save processing power and time (see Van Woudenberg page 3, paragraph [0023]) Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Kim(I) to include "recording marks each having a length not larger than λ/4NA" because one having ordinary skill in the art would recognize the

relationship between CNR and mark length (see Kim(I) page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 2**, Fuji discloses an optical disk for recording and reproducing information that reads on the optical recording medium claimed. First, Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer" claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer, Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in view from said optically transparent layer" where the last layer, "said substrate" is missing. Fifth, Fuji discloses the recording of the optical disk at a power of 6.5 mW (page 1 - 2, section 4, lines 1 - 3, and figure 1) which reads on the "recording power of a laser beam is not lower than 5.3 mW and not higher than 11.0 mW" because 6.5 mW falls within

the claimed range. However, Fuji fails to disclose "a substrate", "a platinum oxide (PtOx) layer", "wherein setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of said laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam", and "while said optical recording medium includes setting information required for recording a recording mark train including recording marks each having a length not larger than λ/4NA". The examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "wherein setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of said laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" and "a substrate", as taught by Hsu. In addition, the examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "setting information required for recording a recording mark train", as taught by Van Woudenberg. Furthermore, the examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "recording marks each having a length not larger than λ/4NA", as taught by Kim(I). Also, the examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "a platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Hsu discloses a recording disc in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of said laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the

wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. Second, in a similar field of endeavor Van Woudenberg discloses a carrier that includes disc information data such as write power, writing speed, pulse width, and the like (page 3, paragraph [0023], lines 1—10) which reads on "while said optical recording medium includes setting information required for recording a recording mark train including recording marks each having a length not larger than λ/4NA" with the exception of "including recording marks each having a length not larger than λ/4NA". Third, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is λ/4NA (page 2, paragraph 4, lines 1—10) which reads on "including recording marks each having a length not larger than λ/4NA". Fourth, in a similar field of endeavor Kim(II) discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Hsu to include "a substrate" because one having ordinary skill in the art would want to use the bottom substrate to increase substrate strength (see Hsu page 2, section 2, lines 23 – 25) Also, it would have been obvious to modify the optical disk for recording and reproducing information of Fuji with the teachings of Hsu to include "wherein

setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of said laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because one having ordinary skill in the art would want to use a shorter wavelength with a higher numerical aperture lens to decrease spot size and increase recording density (see Hsu page 1, paragraph 1, lines 1 – 6). In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Van Woudenberg to include "setting information required for recording a recording mark train" because one having ordinary skill in the art would want to save processing power and time (see Van Woudenberg page 3, paragraph [0023]) Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Kim(I) to include "recording marks each having a length not larger than λ/4NA" because one having ordinary skill in the art would recognize the relationship between CNR and mark length (see Kim(I) page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 3**, Fuji discloses an optical disk for recording and reproducing information that reads on the optical recording medium claimed. First, Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer"

claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer, Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in view from said optically transparent layer" where the last layer, "said substrate" is missing. Fifth, Fuji discloses the reproducing of the optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on the "reproducing power of a laser beam is not lower than 1.1 mW and not higher than 3.3 mW" because 2.5 mW falls within the claimed range. However, Fuji fails to disclose "a substrate", "wherein setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of said laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam", and "while said optical recording medium includes setting information required for reproducing data from a recording mark train including recording marks each having a length not larger than λ/4NA". The examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "wherein setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of said laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" and "a substrate", as taught

by Hsu. In addition, the examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "setting information required for reproducing data from a recording mark train", as taught by Van Woudenberg. Furthermore, the examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "recording marks each having a length not larger than λ/4NA", as taught by Kim(I). Also, the examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include "a platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Hsu discloses a recording disc in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of said laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. Second, in a similar field of endeavor Van Woudenberg discloses a carrier that includes disc information data such as write power, writing speed, pulse width, and the like (page 3, paragraph [0023], lines 1—10) which reads on "while said optical recording medium includes setting information required for reproducing data from a recording mark train including recording marks each having a length not larger than λ/4NA"

with the exception of "including recording marks each having a length not larger than λ/4NA". Third, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is λ/4NA (page 2, paragraph 4, lines 1—10) which reads on "including recording marks each having a length not larger than λ/4NA". Fourth, in a similar field of endeavor Kim(II) discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Hsu to include "a substrate" because one having ordinary skill in the art would want to use the bottom substrate to increase substrate strength (see Hsu page 2, section 2, lines 23 – 25) Also, it would have been obvious to modify the optical disk for recording and reproducing information of Fuji with the teachings of Hsu to include "wherein setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of said laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because one having ordinary skill in the art would want to use a shorter wavelength with a higher numerical aperture lens to decrease spot size and increase recording density (see Hsu page 1, paragraph 1, lines 1 – 6). In addition, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Van Woudenberg to include "setting information required for reproducing data from a recording mark train" because one having ordinary skill in the art would want to save processing power and time (see Van

Woudenberg page 3, paragraph [0023]) Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Kim to include "recording marks each having a length not larger than λ/4NA" because one having ordinary skill in the art would recognize the relationship between CNR and mark length (see Kim page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 4**, Fuji, Hsu, Van Woudenberg, Kim(I), and Kim(II), the combination of hereinafter referenced as FHVWKK, disclose everything claimed as applied above (see claims 1 - 3), in addition FHVWKK disclose a disc structure that is composed of the claimed layer thicknesses. Specifically, Fuji discloses two protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "said second dielectric layer is not thinner than 5 nm and not thicker than 100 nm" and "said third dielectric layer is not thinner than 10 nm and not thicker than 140 nm" because the second dielectric layer is 40 nm (falling within the claimed range) and the third dielectric layer is 20 nm (falling within the claimed range). Also, Fuji discloses a readout layer (page 1, section 2, lines 1 - 4, and figure 1) which reads on "said [ ] oxide [ ] layer is not thinner than 2 nm and not thicker than 100 nm" because the readout layer is 15 nm and falls within the range claimed. Furthermore, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "said light absorbing layer is not thinner than

5 nm and not thicker than 140 nm" because the recording layer is 15 nm and falls within the range claimed. In addition, Hsu a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface (page 1, section 2, lines 1 – 5) which reads on "said substrate is not thinner than 0.6 mm and not thicker than 2.0 mm" because the substrate is 0.6 mm and falls within the range claimed. However, FHVWK fail to disclose where "said optically transparent layer is not thinner than 10 μm and not thicker than 200 μm". The examiner maintains that it was well known in the art for the optical disk for recording and reproducing information disclosed in Fuji to include an optically transparent layer that is not thinner than 10 μm and not thicker than 200 μm, as taught by Kim(II).

In a similar field of endeavor Kim(II) discloses a super – RENS recording disc of a similar structure that as a 0.1 mm cover layer (page 1, paragraph 2, lines 1 -2, and figure 1 "Cover Layer") which reads on "said optically transparent layer is not thinner than 10 μm and not thicker than 200 μm" because the cover layer is optically transparent and has a thickness of 0.1 mm (100 μm) which falls within the range claimed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Kim(II) to include an optically transparent layer that is not thinner than 10 μm and not thicker than 200 μm because one having ordinary skill in the art would want to control the overall thickness of the optical disc.

Regarding **claim 6**, FHVWKK disclose everything claimed as applied above (see claims 1 - 3), in addition FHVWKK disclose the inclusion of a reflecting layer at a location between a light absorbing layer and a substrate. Specifically, Hsu discloses a silver (Ag) reflection layer

that is underneath a write-once recording layer and above a dummy PC substrate (page 2, section 2, lines 22 - 23, and figure 1) which reads on "further comprising a reflecting layer provided between said substrate and said third dielectric layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Hsu to include a reflecting layer a the location beneath the bottom dielectric layer of Fuji and above the substrate of Hsu because one having ordinary skill in the art would want to prevent the loss of laser light due to low reflectivity ((see Hsu page 1, section 2, lines 19 - 21).

Regarding **claim 15**, FHVWKK disclose everything claimed as applied above (see claim 4), in addition FHVWKK disclose the inclusion of a reflecting layer at a location between a light absorbing layer and a substrate. Specifically, Hsu discloses a silver (Ag) reflection layer that is underneath a write-once recording layer and above a dummy PC substrate (page 2, section 2, lines 22 - 23, and figure 1) which reads on "further comprising a reflecting layer provided between said substrate and said third dielectric layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical disk for recording and reproducing information of Fuji by specifically using the teachings in Hsu to include a reflecting layer a the location beneath the bottom dielectric layer of Fuji and above the substrate of Hsu because one having ordinary skill in the art would want to prevent the loss of laser light due to low reflectivity (see Hsu page 1, section 2, lines 19 - 21).

Claims 7 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsu, in view of Fuji, in view of Kim(I), and further in view of Kim(II).

Regarding **claim 7**, Hsu discloses an HD – DVD testing system that reads on the optical recording/reproducing apparatus claimed. First, Hsu discloses recording a disc with an HD—DVD testing system in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface used for recording/reproduction (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. However, Hsu fails to disclose "said first dielectric layer, said platinum oxide (PtOx) layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order", "while said optical recording/reproducing apparatus records a recording mark train including recording marks each having a length not larger than λ/4NA and reproduces data from said recording mark train", and "setting is done as: $Pwx0.1 \leq Pr \leq Pwx0.5$ when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam". The examiner maintains that it was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said first dielectric layer, said [ ] oxide [ ] layer, said second

dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" and "setting is done as: Pwx0.1≤Pr≤ Pwx0.5 when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam", as taught by Fuji. Furthermore, the examiner maintains that it was well known in the art for the HD – DVD testing system disclosed in Hsu to include "recording marks each having a length not larger than λ/4NA and for reproducing data from said recording mark train", as taught by Kim(I). Also, the examiner maintains that is was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer" claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer, Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in view from said optically transparent layer" where the last layer, "said substrate" is missing. Fifth, Fuji discloses the recording of the optical disk at a power of 6.5 mW and reproduction of the

optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on "setting is done as Pwx0.1≤Pr≤ Pwx0.5 when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam" because 6.5 mW times 0.5 equals 3.25 mW which is greater than 2.5 mW and 6.5 mW times 0.1 equals 0.65 mW which is less than 2.5 mW. In addition, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is λ/4NA (page 2, paragraph 4, lines 1—10) which reads on "said optical recording/reproducing apparatus records a recording mark train including recording marks each having a length not larger than λ/4NA and reproduces data from said recording mark train". Also, in a similar field of endeavor Kim(II) discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Fuji to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" because one having ordinary skill in the art would want to use this structure to eliminate the mirror layer of the structure of Hsu. Also, it would have been obvious to modify the HD – DVD testing system of Hsu by with the teachings of Fuji to include "setting is done as: Pwx0.1≤Pr≤ Pwx0.5 when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam" because one having ordinary skill in the art would want to ensure reproduction from an optical recording medium without changing/affecting data already written on the medium. Furthermore,

it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(I) to include "recording marks each having a length not larger than λ/4NA" because one having ordinary skill in the art would recognize the relationship between CNR and mark length (see Kim(I) page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 8**, Hsu discloses an HD – DVD testing system that reads on the optical recording apparatus claimed. First, Hsu discloses recording a disc with an HD—DVD testing system in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface used for recording (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. However, Hsu fails to disclose "said first dielectric layer, said platinum oxide (PtOx) layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between

said optically transparent layer and said substrate in this order", "while said optical recording apparatus records a recording a recording mark train including recording marks each having a length not larger than λ/4NA", and "the recording power of said laser beam is not lower than 5.3 mW and not higher than 11.0 mW". The examiner maintains that it was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" and "the recording power of said laser beam is not lower than 5.3 mW and not higher than 11.0 mW ", as taught by Fuji. Furthermore, the examiner maintains that it was well known in the art for the HD – DVD testing system disclosed in Hsu to include "recording a recording mark train including recording marks each having a length not larger than λ/4NA ", as taught by Kim(I). Also, the examiner maintains that is was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer" claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer, Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said [

] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in view from said optically transparent layer" where the last layer, "said substrate" is missing. Fifth, Fuji discloses the recording of the optical disk at a power of 6.5 mW and reproduction of the optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on the "recording power of said laser beam is not lower than 5.3 mW and not higher than 11.0 mW" because a recording power of 6.5 mW falls within the range claimed. In addition, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is λ/4NA (page 2, paragraph 4, lines 1—10) which reads on "said optical recording apparatus records a recording mark train including recording marks each having a length not larger than λ/4NA ". Also, in a similar field of endeavor Kim(II) discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Fuji to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" because one having ordinary skill in the art would want to use this structure to eliminate the mirror layer of the structure of Hsu. Also, it would have been obvious to modify the HD – DVD testing system of Hsu by with the teachings of Fuji to include the "recording power of said laser beam is not lower than 5.3 mW and not higher than 11.0 mW" because one having ordinary skill in the art would want to ensure

that data is written at a power consistently higher than that of reproduction. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(I) to include "recording marks each having a length not larger than λ/4NA" because one having ordinary skill in the art would recognize the relationship between CNR and mark length (see Kim(I) page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 9**, Hsu discloses an HD – DVD testing system that reads on the optical reproducing apparatus claimed. First, Hsu discloses reproducing a disc with an HD—DVD testing system in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface used for recording (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. However, Hsu fails to disclose "said first dielectric layer, said platinum oxide (PtOx)

layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order", "while said optical reproducing apparatus reproduces data from a recording a recording mark train including recording marks each having a length not larger than λ/4NA", and "the reproducing power of said laser beam is not lower than 1.1 mW and not higher than 3.3 mW". The examiner maintains that it was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" and "the reproducing power of said laser beam is not lower than 1.1 mW and not higher than 3.3 mW ", as taught by Fuji. Furthermore, the examiner maintains that it was well known in the art for the HD – DVD testing system disclosed in Hsu to reproduce "data from a recording mark train including recording marks each having a length not larger than λ/4NA ", as taught by Kim(I). Also, the examiner maintains that is was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer" claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer,

Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in view from said optically transparent layer" where the last layer, "said substrate" is missing. Fifth, Fuji discloses the reproduction of the optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on the "reproducing power of said laser beam is not lower than 1.1 mW and not higher than 3.3 mW" because a reproducing power of 2.5 mW falls within the range claimed. In addition, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is λ/4NA (page 2, paragraph 4, lines 1—10) which reads on "said optical reproducing apparatus reproduces data from a recording mark train including recording marks each having a length not larger than λ/4NA". Also, in a similar field of endeavor Kim(II) discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Fuji to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" because one having ordinary skill in the art would want to use this structure to eliminate the mirror layer of the structure of Hsu. Also, it would have been obvious to modify the HD – DVD testing system of Hsu by with the

teachings of Fuji to include "reproducing power of said laser beam is not lower than 1.1 mW and not higher than 3.3 mW" because one having ordinary skill in the art would want to ensure reproduction from an optical recording medium without changing/affecting data already written on the medium. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(I) to include "recording marks each having a length not larger than λ/4NA" because one having ordinary skill in the art would recognize the relationship between CNR and mark length (see Kim(I) page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 10**, Hsu discloses the recording and readout testing of a super—RENS disc using an HD – DVD testing system that reads on the data recording/reproducing method claimed. First, Hsu discloses recording a disc with an HD—DVD testing system in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident

surface used for recording/reproduction (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. However, Hsu fails to disclose "said first dielectric layer, said platinum oxide (PtOx) layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order", "while said data recording/reproducing method records a recording mark train including recording marks each having a length not larger than λ/4NA and reproduces data from said recording mark train", and "setting is done as Pwx0.1≤Pr≤ Pwx0.5 when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam". The examiner maintains that it was well known in the art for the recording and readout testing of a super—RENS disc using an HD – DVD testing system disclosed in Hsu to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" and "setting is done as Pwx0.1≤Pr≤ Pwx0.5 when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam", as taught by Fuji. Furthermore, the examiner maintains that it was well known in the art for the recording and readout testing of a super—RENS disc using an HD – DVD testing system disclosed in Hsu to include "recording marks each having a length not larger than λ/4NA and reproduces data from said recording mark train", as taught by Kim(I). Also, the examiner maintains that is was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer" claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer, Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said noble metal oxide layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in view from said optically transparent layer" where the last layer, "said substrate" is missing. Fifth, Fuji discloses the recording of the optical disk at a power of 6.5 mW and reproduction of the optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on "setting is done as $Pwx0.1 \leq Pr \leq Pwx0.5$ when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam" because 6.5 mW times 0.5 equals 3.25 mW which is greater than 2.5 mW and 6.5 mW times 0.1 equals 0.65 mW which is less than 2.5 mW. In addition, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is $\lambda/4NA$ (page 2, paragraph 4, lines 1—10) which reads on "said data recording/reproducing method records a recording mark train including recording marks each having a length not larger than $\lambda/4NA$ and reproduces data from said recording mark train". Also, in a similar field of endeavor Kim(II)

discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu by specifically using the teachings in Fuji to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" because one having ordinary skill in the art would want to use this structure to eliminate the mirror layer of the structure of Hsu. Also, it would have been obvious to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu with the teachings of Fuji to include "setting is done as $Pwx0.1 \leq Pr \leq Pwx0.5$ when Pw designates recording power of said laser beam and Pr designates reproducing power of said laser beam" because one having ordinary skill in the art would want to ensure reproduction from an optical recording medium without changing/affecting data already written on the medium. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu by specifically using the teachings in Kim(I) to include "recording marks each having a length not larger than $\lambda/4NA$" because one having ordinary skill in the art would recognize the relationship between CNR and mark length (see Kim(I) page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because

one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 11,** Hsu discloses the recording and readout testing of a super—RENS disc using an HD – DVD testing system that reads on the data recording method claimed. First, Hsu discloses recording a disc with an HD—DVD testing system in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface used for recording (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. However, Hsu fails to disclose "said first dielectric layer, said platinum oxide (PtOx) layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order", "while said data recoding method records a recording a recording mark train including recording marks each having a length not larger than λ/4NA", and the "recording power of said laser beam is not lower than 5.3 mW and not higher than 11.0 mW". The examiner maintains that it was well known in the art for the recording and readout testing of a super—RENS disc using an HD – DVD testing system disclosed in Hsu to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light

absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" and the "recording power of said laser beam is not lower than 5.3 mW and not higher than 11.0 mW ", as taught by Fuji. Furthermore, the examiner maintains that it was well known in the art for the recording and readout testing of a super—RENS disc using an HD – DVD testing system disclosed in Hsu to include recording "a recording mark train including recording marks each having a length not larger than $\lambda/4NA$ ", as taught by Kim(I). Also, the examiner maintains that is was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer" claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer, Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in view from said optically transparent layer" where the last layer, "said substrate" is missing. Fifth, Fuji discloses the recording of the optical disk at a power of 6.5 mW and reproduction of the

optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on the "recording power of said laser beam is not lower than 5.3 mW and not higher than 11.0 mW" because a recording power of 6.5 mW falls within the range claimed. In addition, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is λ/4NA (page 2, paragraph 4, lines 1—10) which reads on "said data recording method records a recording mark train including recording marks each having a length not larger than λ/4NA ". Also, in a similar field of endeavor Kim(II) discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu by specifically using the teachings in Fuji to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" because one having ordinary skill in the art would want to use this structure to eliminate the mirror layer of the structure of Hsu. Also, it would have been obvious to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu with the teachings of Fuji to include the "recording power of said laser beam is not lower than 5.3 mW and not higher than 11.0 mW" because one having ordinary skill in the art would want to ensure that data is written at a power consistently higher than that of reproduction. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recording and readout testing of a super—RENS disc

using an HD – DVD testing system of Hsu by specifically using the teachings in Kim(I) to include "recording marks each having a length not larger than λ/4NA" because one having ordinary skill in the art would recognize the relationship between CNR and mark length (see Kim(I) page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 12**, Hsu, Fuji, Kim(I), and Kim(II), the combination of hereinafter referenced as HFKK, disclose everything claimed as applied above (see claim 11), in addition HFK disclose a data recording method wherein "said recording power is set to be at least 0.5 mW higher and at most 2.0 mW higher than a value of recording power with which a carrier/noise ratio will be substantially saturated". Specifically, Fuji discloses the recording of the optical disk at a power of 6.5 mW and reproduction of the optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on "said recording power is set to be at least 0.5 mW and at most 2.0 mW higher than a value of recording power with which a carrier/noise ratio will be substantially saturated" because 6.5 mW plus 0.5 mW equals 7.0 mW which is greater than 5.3 mW and 6.5 mW plus 2.0 mW equals 8.5 mW which is less than 11.0 mW.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu by specifically using the teachings in Fuji to include "said

recording power is set to be at least 0.5 mW higher and at most 2.0 mW higher than a value of recording power with which a carrier/noise ratio will be substantially saturated" because one having ordinary skill in the art would want to ensure that sufficient energy is delivered to the light absorbing layer (see Kim page 3, paragraph 6, lines 28 – 35).

Regarding **claim 13**, Hsu discloses the recording and readout testing of a super—RENS disc using an HD – DVD testing system that reads on the data reproducing method claimed. First, Hsu discloses reproducing a disc with an HD—DVD testing system in which a laser light of a wavelength of 405 nm and an objective lens having a numerical aperture of 0.65 are used for recording and readout (page 2, section 2, lines 25 – 28) which reads on "setting is done so that λ/NA is not longer than 640 nm . . . when λ designates a wavelength of a laser beam and NA designates a numerical aperture of an objective lens for focusing said laser beam" because the wavelength of 405 nm divided by the numerical aperture of 0.65 equals approximately 623 nm which is less than 640 nm. In addition, Hsu discloses a UV - curing resin/dummy PC substrate that occurs at the end of a similar disc structure in order of the layers from the light incident surface used for recording (page 1, section 2, lines 1 – 4) which reads on "said substrate in this order in view from said optically transparent layer" claimed. However, Hsu fails to disclose "said first dielectric layer, said platinum oxide (PtOx) layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order", "while said data reproducing method reproduces data from a recording a recording mark train including recording marks each having a length not larger than λ/4NA", and the "reproducing power of said laser beam is not lower than 1.1 mW and not higher than 3.3 mW". The examiner maintains that it was well known in the art

for the recording and readout testing of a super—RENS disc using an HD – DVD testing system disclosed in Hsu to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" and the "reproducing power of said laser beam is not lower than 1.1 mW and not higher than 3.3 mW ", as taught by Fuji. Furthermore, the examiner maintains that it was well known in the art for the recording and readout testing of a super—RENS disc using an HD – DVD testing system disclosed in Hsu to reproduce "data from a recording mark train including recording marks each having a length not larger than λ/4NA ", as taught by Kim(I). Also, the examiner maintains that is was well known in the art for the HD – DVD testing system disclosed in Hsu to include "said platinum oxide (PtOx) layer", as taught by Kim(II).

First, in a similar field of endeavor Fuji discloses a substrate (page 1, section 2, lines 1 - 3, and figure 1) which reads on "an optically transparent layer" claimed. Second, Fuji discloses three protective layers (page 1, section 2, lines 1 - 3, and figure 1) which read on "a first dielectric layer", "a second dielectric layer", and "a third dielectric layer" claimed. Third, Fuji discloses a recording layer made of $Ge_2Sb_2Te_5$, (page 1, section 2, lines 1 - 4, and figure 1) which reads on "a light absorbing layer" claimed. Fourth, Fuji discloses schematically a structure of layers beginning from a light incident surface as follows: Substrate, First protective layer, Readout layer, Second protective layer, Recording layer, and Third protective layer (page 1, section 2, lines 1 - 4, and figure 1). The order of layers reads on "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order in

view from said optically transparent layer" where the last layer, "said substrate" is missing. Fifth, Fuji discloses the reproduction of the optical disk at a power of 2.5 mW (page 1 -2, section 4, lines 1 - 4, and figure 1) which reads on the "reproducing power of said laser beam is not lower than 1.1 mW and not higher than 3.3 mW" because a reproducing power of 2.5 mW falls within the range claimed. In addition, in a similar field of endeavor Kim(I) discloses that the resolution limit for the mark length of a disc having a similar structure is λ/4NA (page 2, paragraph 4, lines 1—10) which reads on "said data reproducing method reproduces data from a recording mark train including recording marks each having a length not larger than λ/4NA". Also, in a similar field of endeavor Kim(II) discloses the use of platinum oxide (PtOx) layer in a super-RENS disk (page 1, paragraph 1, lines 1- 4, and figure 1 (See layer of PtOx.)) which reads on "a platinum oxide (PtOx) layer".

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu by specifically using the teachings in Fuji to include "said first dielectric layer, said [ ] oxide [ ] layer, said second dielectric layer, said light absorbing layer and said third dielectric layer being disposed between said optically transparent layer and said substrate in this order" because one having ordinary skill in the art would want to use this structure to eliminate the mirror layer of the structure of Hsu. Also, it would have been obvious to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu by with the teachings of Fuji to include "reproducing power of said laser beam is not lower than 1.1 mW and not higher than 3.3 mW" because one having ordinary skill in the art would want to ensure reproduction from an optical recording medium without changing/affecting

data already written on the medium. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recording and readout testing of a super—RENS disc using an HD – DVD testing system of Hsu by specifically using the teachings in Kim(I) to include "recording marks each having a length not larger than $\lambda/4NA$" because one having ordinary skill in the art would recognize the relationship between CNR and mark length (see Kim(I) page 3, paragraph 5, line 1 -14, and figure 3 a). Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the HD – DVD testing system of Hsu by specifically using the teachings in Kim(II) to include "a platinum oxide (PtOx) layer" because one having ordinary skill in the art would want to increase the decomposition temperature above that of AgOx.

Regarding **claim 14**, HFKK disclose everything claimed as applied above (see claim 13), in addition HFK disclose a data reproducing method wherein "said reproducing power is set to be at least 0.1 mW higher and at most 0.3 mW higher than a value of reproducing power with which a carrier/noise ratio will be substantially saturated". Specifically, Fuji discloses the recording of the optical disk at a power of 6.5 mW and reproduction of the optical disk at a power of 2.5 mW (page 1 - 2, section 4, lines 1 - 4, and figure 1) which reads on "said reproducing power is set to be at least 0.1 mW and at most 0.3 mW higher than a value of reproducing power with which a carrier/noise ratio will be substantially saturated" because 2.5 mW plus 0.1 mW equals 2.6 mW which is not lower than 1.1 mW and 2.5 mW plus 0.3 mW equals 2.8 mW which is less than 3.3 mW.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the recording and readout testing of a super—RENS disc using an

HD – DVD testing system of Hsu by specifically using the teachings in Fuji to include "said reproducing power is set to be at least 0.1 mW higher and at most 0.3 mW higher than a value of reproducing power with which a carrier/noise ratio will be substantially saturated" because one having ordinary skill in the art would want to ensure that the best acceptable CNR can be obtained (see Hsu page 4, section 3, lines 68 -76, and figure 8)

Response to Arguments

Applicant's arguments with respect to the claimed invention have been considered but are moot in view of the new grounds of rejection.

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIAN BUTCHER whose telephone number is (571)270-5575. The examiner can normally be reached on Monday – Friday from 6:30 AM to 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young, can be reached at (571) 272 - 7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BMB
February 20, 2009

/Wayne Young/
Supervisory Patent Examiner, Art Unit 2627